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SF1 - 3U 19" 8-Port Unmanaged Ethernet Switch, PoE, RJ45

- **3U, 18 HP, 19" rack mountable**
- **8 Fast Ethernet ports (front) on RJ45 connectors**
- **Power over Ethernet PSE functionality**
- **Service interface via D-Sub**
- **LEDs for port, PoE and board states**
- **Wide input range PSU (14.4 to 154 V), EN 50155 qualified (railways)**
- **-40 to +70(+85)°C according to EN 50155 Class Tx with qualified components**

The SF1 is a stand-alone, unmanaged industrial Fast Ethernet switch that comes in a compact 3U, 18HP, 19" cassette. It provides eight channels at the front panel accessible through RJ45 connectors.
The SF1 is supplied by its integrated, rugged power supply unit (PSU), with a power connector at the front panel. The entire switch consumes less than 7 W and needs no cooling.
The SF1 supports full-duplex and half-duplex operation with auto-negotiation, high-speed non-blocking store-and-forward switching, Quality of Service (QoS) support with four traffic classes IEEE 802.1p and three-level 802.1x security. The switch is fault tolerant and restores itself on its own: If a link is temporarily unavailable, frames can be sent via backup/redundant links (spanning tree protocol / link aggregation) and no data loss occurs. Its built-in test mechanisms make the SF1 an even more reliable component in the communication system.
In addition, the switch can act as Power over Ethernet (PoE) Power Sourcing Equipment (PSE), supplying other devices on ports 1 and 2 with power.
By using an application-specific configuration EEPROM, the SF1 can act similarly to a managed switch with fixed settings. This enables features untypical for unmanaged models like 802.1p priority and port based priority, port based VLAN or IEEE 802.1q VLAN IDs.
Additionally, a service port is accessible at the front panel on an M12 connector, enabling authorized personnel to configure the switch via an SPI interface.
The SF1 was specifically designed for rugged mobile communication systems with high demands. It is thus for example fully compliant with the EN 50155 railway standard. All components inside the cassette are specified for a -40 to +85°C operation temperature. There are no socketed components, hardening the box against shock and vibration. Its PCBs are ready for coating and the switch has a guaranteed minimum standard availability of 5 years.

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Technical Data

Switch Fabric Key Features
- Eight 10/100Base-T ports at front panel
  - Electrical isolation: 1500 Vrms
- Auto-negotiation
- High-speed non-blocking, store-and-forward switching
- 8K MAC address lookup table with automatic learning and aging
- QoS (Quality of Service) support with 4 traffic classes (IEEE 802.1p tagged frames)
- Layer 2 switching
- Back pressure or IEEE802.3x flow control
- Automatic MDI/MDI-X crossover (all ports)
- TCP/IP (IPv4, IPv6)

Layer 2 Features
- Transparent bridging
- QoS (DiffServ) and 802.1p traffic prioritization queuing, polishing, shaping
- VLAN-aware bridging

Security Features
- MAC based and IP based access list (ACL) for traffic filtering
- Rate-limiting and storm control to prevent packet flooding from malicious peers

Supported Ethernet Standards
- Transparent bridging: IEEE 802.1d, 2004
- VLAN: IEEE 802.1q Rev D5.0, 2005
- Port based VLANs: IEEE 802.1q Rev D5.0, 2005
- Link aggregation: IEEE 802.3ad, 2005
- Power over Ethernet support: IEEE 802.1af
- Priority based switching: IEEE 802.1p

Power Over Ethernet Features
- Power over Ethernet functions on ports 1 and 2
  - PSE (Power Sourcing Equipment) function
  - Supplies one PD class 0 device or two PD class 2 devices (up to 15W total)

Service Interface
- 9-pin D-Sub connector at front
- SPI interface for external SPI programmer

Front I/O
- 8 Ethernet ports via RJ45 connectors
- 1 service interface via 9-pin D-Sub plug connector
- 1 power input via mixed 7-pin D-Sub plug connector
- 16 link and activity Ethernet status LEDs (2 per channel)
- 4 Power over Ethernet status LEDs, 2 each for ports 1 and 2
- Status LEDs for power and reset

Electrical Specifications
- Power supply unit
  - 14.4..154 VDC wide range according to EN 50155
- Isolation (according to EN 50155)
  - Input/output: 1500 Vrms
  - Input/shield: 1500 Vrms (7W2 D-Sub power connector: 1000 Vrms)
  - Output/shield: 1500 Vrms
  - Ground/shield: 1500 Vrms
  - Service connector: 1000 Vrms
- Power consumption: 24 W (incl. 15 W PoE)
- MTBF: 489,962 h @ 40°C according to IEC/TR 62380 (RDF 2000)

Mechanical Specifications
- 19" rack-mount standard
- Dimensions: 3U, 18HP, 168 mm depth
- Weight: 870 g

Environmental Specifications
- Temperature range (operation):
  - -40..+70°C (qualified components, +85°C for ten minutes according to EN 50155 Class Tx)
- Temperature range (storage): -40..+85°C
- Relative humidity (operation): max. 95% non-condensing
- Relative humidity (storage): max. 95% non-condensing
- Altitude: -300 m to + 3,000 m
- Shock: according to EN 60068-2-27
- Bump: according to EN 60068-2-29
- Vibration (sinusoidal): according to EN 60068-2-6

Safety
- PCBs manufactured with a flammability rating of 94V-0 by UL recognized manufacturers

EMC
- Tested according to EN 55022 (radio disturbance), EN 61000-4-2 (ESD), EN 61000-4-4 (burst) and EN 61000-4-5 (surge)

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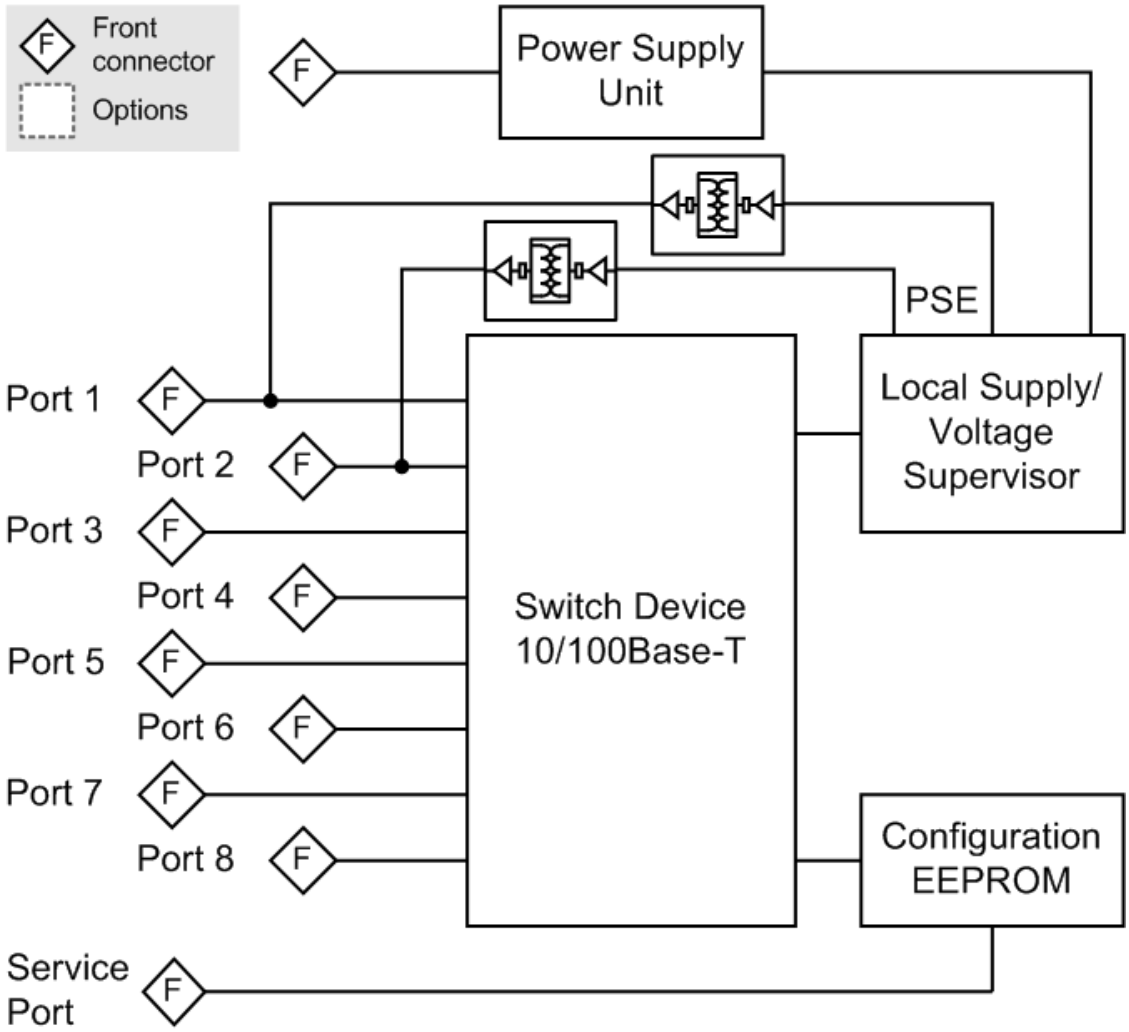
Diagram


Front connector
Options
F
Power Supply Unit
PSE
Local Supply/ Voltage Supervisor
Port 1
Port 2
Port 3
Port 4
Port 5
Port 6
Port 7
Port 8
Switch Device 10/100Base-T
Configuration EEPROM
Service Port

Configuration & Options

Standard Configurations

Article No.	Connectors	Front Panel	Management	Power over Ethernet
19SF01-00	RJ45	18 HP	Unmanaged	Yes (PSE on ports 1 and 2)
19SF02-00	RJ45	18 HP	Managed	Yes (PSE on ports 1 and 2)
19SF03-00	M12	22 HP	Managed	Yes (PSE on ports 1 and 2)
19SF04-00	M12	22 HP	Unmanaged	Yes (PSE on ports 1 and 2)

Options

Ethernet Switch

- Fixed managed version
  - With fixed configuration according to customer requirements

Ethernet-powered version without PSU (on request)

- Class 2 Powered Device supplied via Ethernet Port 1
  - No internal power supply unit

Environmental specifications

- Conformal coating on request

Please note that some of these options may only be available for large volumes. Please ask our sales staff for more information.

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Ordering Information

Standard SF1 Models

19SF01-00	Unmanaged Switch with 8 Fast Ethernet ports on RJ45, PSU, 18HP, -40..+85°C with qualified components

Related Hardware

19SF02-00	Managed Switch with 8 Fast Ethernet ports on RJ45, PoE, PSU, 18HP, -40..+85°C with qualified components
19SF03-00	Managed Switch with 8 Fast Ethernet ports on M12, PoE, PSU, 22HP, -40..+85°C with qualified components, conformal coating
19SF04-00	Unmanaged Switch with 8 Fast Ethernet ports on M12, PSU, 22HP, -40..+85°C with qualified components, conformal coating

Documentation

20SF01-00	SF1/SF4 User Manual

For the most up-to-date ordering information and direct links to other data sheets and downloads, see the SF1 online data sheet under » www.men.de.

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